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county, Minn.," I find an abundance of macrospores, besides several species of fossil rhizopods, fragments of Diatomaceae, and other organic remains, and several species of well-preserved and characteristic Foraminifera,—among others, *Textularia globosa* and *Rotalia globosa* as identified by Professor Joseph Leidy, who advises me that these forms are yet living and common in the Atlantic Ocean. A disk form with crenate margin, much resembling the lorica of an infusorian, is quite abundant, and large quantities of forms and fragments not yet identified. I presume that these fossils are mostly derived from the cretaceous formations, of which the Minnesota clays contain large amounts.

From careful observation and comparison, and the great similarity of much of the contents of the Minnesota clays with what I find associated with the macrospores found here, I am confident that I shall yet find in the Minnesota clays, mingled with the Foraminifera, etc., of the cretaceous formation, the shale and macrospores of the Devonian.

All of the fossils yet identified in the Chicago or Minnesota clays are undoubtedly of marine origin.

B. W. THOMAS.

Chicago, Feb. 11.

Rare Vermont birds.

The work of collecting material for a list of Vermont birds has revealed some notes of particular interest to ornithological students. Quite a number of rare or hitherto unobserved species have been found to be regular summer visitors in certain localities.

The orange-crowned warbler (*Helminthophaga celata* Say, Bd.), a rare straggler to New England, has been detected breeding in small numbers at Island Lake, Mount Killington, and at Lake Bomoseen in Castleton. In the latter locality, also, the blackpoll warbler (*Dendroeca striata* Fonnst.) is a common summer resident. A specimen of the rare Connecticut warbler (*Oporornis agilis* Wils., Bd.) was taken at Rutland, April 24, 1879. This is probably the first published record north of Massachusetts. At Burlington I noted several flocks of the Bohemian waxwing (*Ampelis garrulus* L.), Nov. 25, 1882, and Jan. 21, 1883.

The loggerhead shrike (*Lanius ludovicianus* L.) is a regular resident in certain districts in summer. Several nests have been found at Brandon, Rutland, and elsewhere.

White-winged crossbills (*Loxia leucoptera* Gm.) come frequently in winter, and some are known to breed. The discovery of two nests with young, at Lunenburg, March 22, 1878, by Mr. W. E. Balch, is notable.

The pine linnet or American siskin (*Chrysomitris pinus* Wils., Bp.) was found nesting at Rutland, May 15, 1879; and Mr. D. C. Worcester discovered two of their nests at Hartland. One was built in a pine in his yard, and commenced in March; the other was in a spruce, and contained young birds by the first week in April.

The black-backed three-toed woodpecker (*Picoides arcticus* Sw., Gr.), known generally as a casual winter visitor to New England, was found in the capacity of a resident at Lunenburg, where the nests were taken June 1, 1880, and May 29, 1882.

A nest of the American avocet (*Recurvirostra americana* Gm.) was recorded at Rutland in the spring of 1882; and the Florida gallinule (*Gallinula galeata* Licht, Bp.), of southern extraction, breeds at Castleton, where several of the birds have been secured. A specimen of the common cormorant

(*Phalacrocorax carbo* L., Leach) was shot on Lake Champlain, and is now in possession of Mr. Jenness Richardson of Rutland, upon whose valuable observations many of these notes are based.

Of the sooty tern (*Sterna fuliginosa* Gm.), another rare straggler from the south, two specimens have been recently taken in Vermont,—at Rutland and Larrabee's Point, Lake Champlain. Of the still rarer short-tailed tern (*Hydrochelidon lariformis* L., Coues), Mr. Richardson saw three individuals on Lake Bomoseen, Castleton, one of which he secured.

The sea-dove or dovekie (*Alle nigricans* Sink), a winter waif from the arctic regions, has been known to occur but once in the state. This was at Sharon, where it was found one morning in the autumn in a gentleman's porch.

Several other birds might be mentioned whose presence here, or in the New-England States, is casual and infrequent. About two hundred species have thus far been noticed within the borders of the state, and it is likely that future observations will largely increase the number.

FRANCIS H. HERRICK.

The red skies in the Pacific.

Only last week I learned from Hon. H. M. Whitney, postmaster-general, that on Sept. 5, Mrs. Whitney and himself distinctly observed the sun's disk, before setting, to be green. His residence is an exception to most of ours in Honolulu, from which trees cut off the view of the horizon. My wife spoke much that night of a strange green cumulus, seen by her ten minutes before calling me to observe the portentous masses of color pouring out all over the sky.

I beg special attention to my remark in the *Hawaiian annual* upon the 'earth's shadow sharply cutting off' the upper rim of the first-glow:—

"One marvellous effect is often a sudden appearance of thick luminous haze where a minute before all was pellucid, unsullied blue. Meantime the glow especially gathers and deepens above the western horizon along a line of 60 degrees until the whole occident is a uniform sheet of flaming crimson, shading up into lilac and orange. Down upon that creeps the dark earth-shadow, sharply cutting off the edge of the blazing sheet, often separated with the shadows of remote cumuli. As the shadow descends, the glow deepens, until night has closed down upon it. At once on the darkened sky arises a secondary or 'after-glow,' repeating the same phenomena as the stars come out with almost equal brilliancy of effect. In this after-glow the defined shadow-line is lacking, and the deep fiery red above the horizon bears a singular resemblance to the peculiar reflection on the sky of some immense but remote conflagration. These appearances occur before sunrise with equal brilliancy, but in reversed order."

This effect was very manifest in the strong, heavy glows of September, showing clearly that the first glow reflected the sun's direct rays, while in the after-glow, which had no defined upper rim, but continued much longer, the haze reflects only the light of the first-glow. This bears upon estimates of the height of the haze.

Observers here are well agreed that during November there was a very great abatement of the glows, amounting almost to a cessation, although the whitish corona was always well developed through the day. Early in December the glows were renewed, and for six weeks continued with much uniformity, and quite as brilliant as in October. They are now somewhat abated, although quite uniform nightly. In September and October they were extremely unequal, as well as varying in position of greatest color north or south of west.

The bark C. Southard Hurlburt observed the glow on Sept. 3. She was dismasted in a cyclone, Aug. 18, and came to Honolulu for repairs. On the former